

IPv4 HoA support in DSMIPv6 on an IPv6 only Home Link

draft-premec-mext-extended-home-link-04

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Changes from version -02

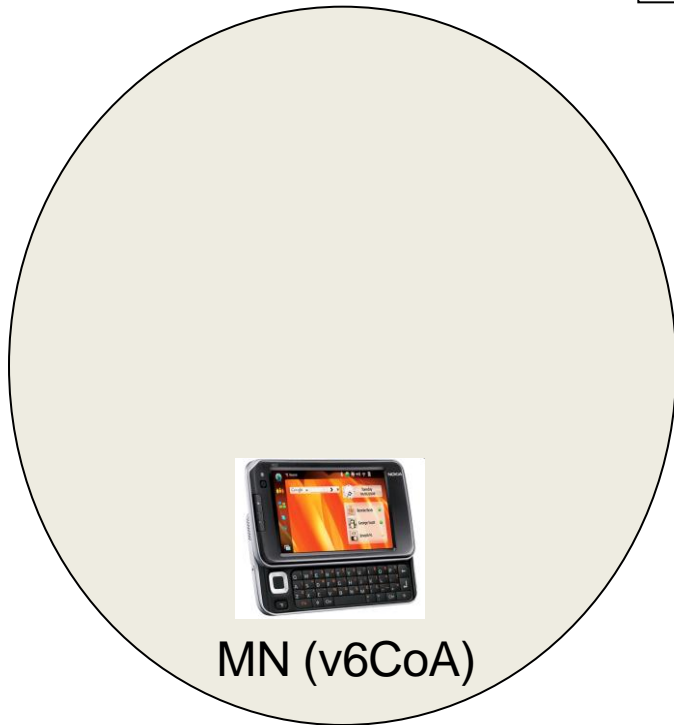
- Editorial changes (mainly on Introduction)
- Added a Problem Statement section
- Added a new (editor) author
- No changes on core ideas / proposals

Problem

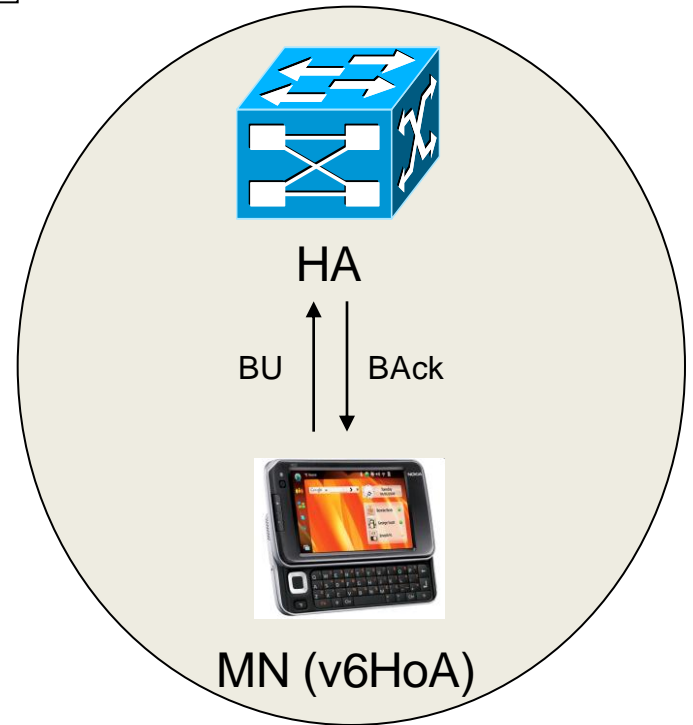
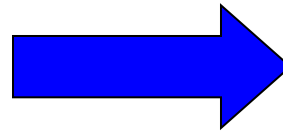
Binding Cache at HA

v6HoA -> v6CoA
v4HoA -> v6CoA

IPv6 connection is OK
IPv4 connection is gone



IPv6 Foreign Link



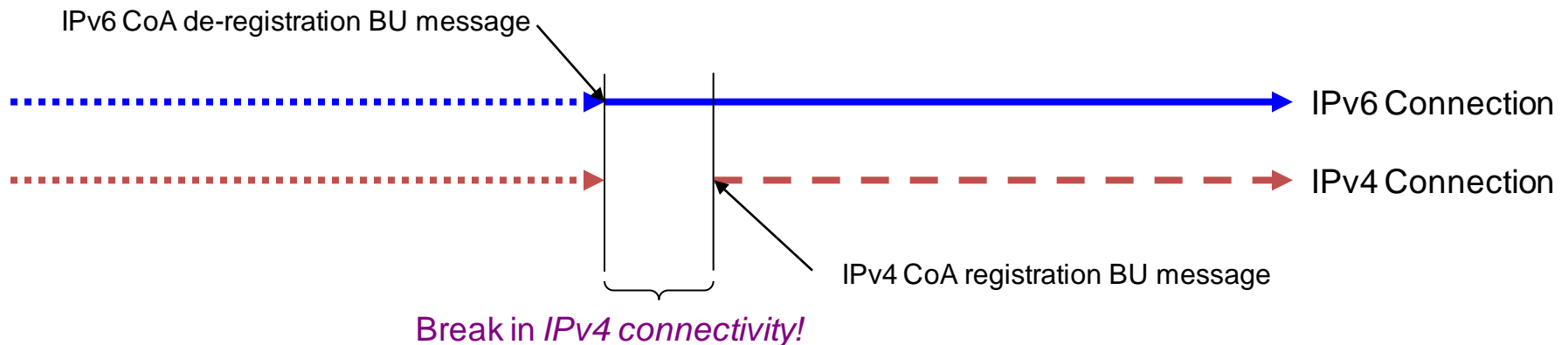
IPv6-only Home Link

Problem (cont'd)

- RFC 5555, section 4.4.2.1
 - “.. *the mobile node cannot remove the IPv6 home address binding while maintaining an IPv4 home address binding.* ”
- As a consequence, for scenarios where a dual-stack MN which has been assigned an IPv6 and IPv4 HoAs returns to an IPv6-only home link, **it breaks the IPv4 connections**

Problem (cont'd)

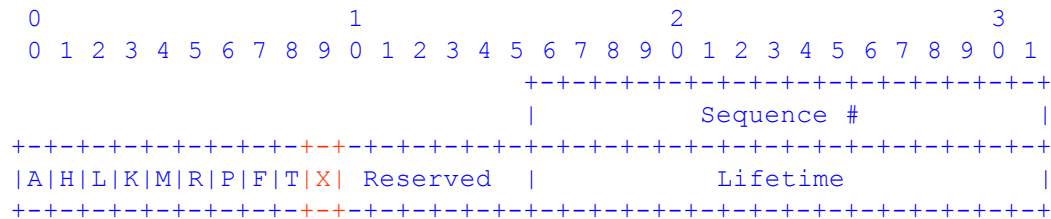
- If the IPv4 HoA binding needs to be kept when returning to an IPv6-only home link, an *IPv6 HoA* \rightarrow *IPv4 HoA* BCE needs to be created (through a new IPv4 CoA BU) on the HA after the de-registration BU



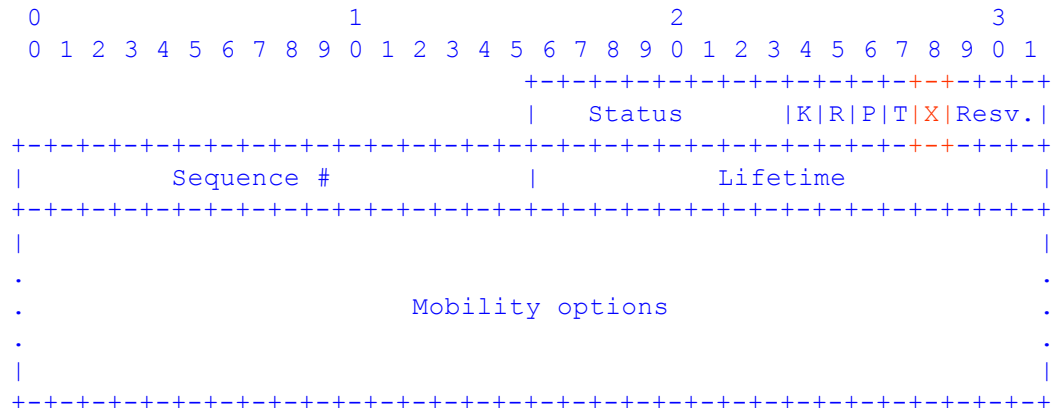
- Hence, support for removing the IPv6 HoA binding while updating the IPv4 HoA binding when the MN returns to its IPv6-only link is required

Proposal

- Extend the BU message with a new (X) flag, that indicates a request to bind the IPv6 home address as the CoA to the IPv4 home address



- Extend the BAck message with a new (X) flag, that indicates that the HA successfully created the binding between the IPv4 HoA and the IPv6 HoA



Proposal (cont'd)

- Update the de-registration process when MN attaches to its v6-only Home Link
- Update the binding semantics
 - The (X) flag changes the normal semantics of deletion of a Binding Cache Entry (BCE), as it requires that only the IPv6 entry is removed
 - When the (X) flag is set, the HA will de-register *_only_* the IPv6 HoA binding, even if lifetime is non-zero
 - HA will then perform two atomic operations: 1) *de-register the IPv6 HoA binding AND 2) update the IPv4 HoA binding to the actual IPv6 HoA*

Next steps

- The I-D fixes a flaw w.r.t a scenario which has not been considered previously and hence missing in RFC5555
- Request the adoption of this I-D as a WG document in MEXT

Questions and Discussion



Comments from Mailing List

- Question about the need for sending the IPv4 Home Address option in BU:
 - *“... if the home agent is smart enough to understand the (X) flag, it should be smart enough to know of the relation between the IPv4 HoA and the IPv6 HoA.”*
 - However, by mandating the IPv4 Home Address option we ensure the HA has all the information necessary to locate and update the IPv4 HoA BCE
- Question about Section 3 “Problem Statement” suggestion for keeping the IPv4 HoA binding by sending a second BU after the de-registration BU:
 - *“... such a BU will be treated by all home agents as a de-registration ... it is not possible with RFC5555 packets and semantics to create the IPv4 HoA entry”*
 - Actually, you can create IPv4 HoA bindings while in IPv6-only home links with RFC 5555
 - What you cannot do is to do a handover back to the IPv6-only home link while updating the previously existing IPv4 HoA binding